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HIGH SPEED DRILLING MAKES NEW DEMANDS ON BAKU BEARING PLANT; MOSCOW PLANT SHORTENS TIME FOR MACHINING BEARING RACES

BAKU PLANT SUPPLIES BEARINGS FOR DRILLING MACHINERY -- Baku, Bakinskiy Rabochiy, 8 Feb 51

The Baku State Bearing Plant, which makes precision roller bearings, was built in the post-war period and is the first roller bearing plant in Azerbaydzhan. Its shops are equipped with new machine tools, powerful forging and heat-treating equipment, and control and measuring apparatus. Many processes have been made automatic.

The putting into operation of the Baku State Bearing Plant strengthened a weak link in republic petroleum-machine building for high-speed drilling has put heavy demands on the products of the bearing industry. This plant specializes in the production of several types of large-size bearings, including supporting bearings for swivels, which must bear an enormous load. Drillers are increasing the speed of sinking petroleum wells, are penetrating deeper and deeper into the petroleum bearing strata, and bearing manufacturers should not hold them back. Their task is to assure high wear resistance of bearings under ever increasing loads and speed of rotation.

Many machine-building enterprises of the Soviet Union which produce drilling equipment, including the Uralmashzavod (Ural Machine Building Plant), now receive bearings from the Baku State Bearing Plant.

Plant workers have mastered the operation of the highly productive machine tools and aggregates with which the plant is equipped. There was no place in Baku where the workers could pick up the specific technical experience necessary for the manufacture of bearings; nevertheless, personnel capable of directing complex technological processes and working to the high standard of accuracy required were trained in a short time. The plant sent workers to other bearing plants to study under experienced bearing workers. In turn, experienced engineers, foremen, and Stakhanovites came from these enterprises to teach the personnel of the young plant.

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As personnel were trained and the plant's productive capacity increased, the plan was filled and exceeded. Last year, the annual program for all required types of parts was fulfilled on 28 December. Output for 1950 grew 32 percent as compared to 1949, not by the acquisition of new equipment or workers, but by the application of progressive machining methods which sharply increased labor productivity. Labor productivity in 1950 equaled 238 percent of the 1946 level. Lately, the plant has been trying to increase the volume of production per unit of existing equipment.

Labor productivity has been increased by high-speed machining of bearing races on lathes equipped with titanium-cobalt alloy tools. Lathe operators have increased the speed of machining steel articles to 100 meters per minute. To save the machine-tool operator time spent on auxiliary operations, technologists and designers equipped machine tools with chucks having pneumatic grips, sharply increasing labor productivity of lathe operators. Conveyance of heavy parts is now mechanized by telphers. Annealing of bearing races is completely mechanized, and technological mistakes are precluded by automatic temperature control. Introduction of an electric annealing furnace raised the quality and output of bearing races. Highly productive automatic machines are now being used to make bearing rollers, and diamondless truing of grinding wheels has been adopted.

In 1947, it took 28 hours to make a large bearing; now it takes 11 hours. It formerly took 18 hours to make smaller bearings, now it takes 6 hours.

Every stage in the machining of bearing parts is checked. Bearing plants dispose of a great number of control and measuring instruments of extreme accuracy, since the tolerance on bearing parts is within hundredths of a millimeter and control must be very accurate.

Z. Rzayeva, a design engineer in the plant's technical department, developed an attachment for diamondless truing of grinding wheels, thus decreasing the consumption of costly materials. He has also designed an extremely accurate measuring instrument capable of automatically controlling the dimensions of a bearing part while it is being machined.

The growth of the bearing output, on the basis of the 1946 level, is shown as follows (in percent): 1946, 100; 1947, 277; 1948, 485; 1949, 622; 1950, 826 percent.

DRILLERS WANT BETTER SUPPORTING BEARINGS FOR SWIVELS -- Baku, Bakinskiy Rabochiy, 8 Feb 51

The putting into operation of the Baku State Bearing Plant was a major event for drilling workers of the Azerbaydzhan petroleum industry, for bearings are needed by the plants which build and carry on capital repair of drilling equipment. There is also a great demand for spare bearings by drilling offices. The plant is now satisfying this demand, making sufficient quantities of large-size roller bearings for rigging the basic units of drilling equipment, swivels, tackle systems, and sludge pumps. The quality of the plant's products has shown noticeable improvement lately.

Transmission shaft bearings for sludge pumps made by the plant have proved durable in operation. Their mass production has enabled the Machine-Building Plant imeni Stalin of the Azneftemash (Azerbaydzhan Petroleum-Machine Building) Trust and the machine shops of the drilling office greatly to increase sludge pump renovation. This new source of tackle system bearings has enabled Baku petroleum-machine building plants to expedite the production of crown and tackle blocks so necessary to drillers, but there are still occasions when the plant puts out bearings of this type with slight deviations from the dimensions indicated in the plans.

The drillers make special demands of supporting bearings for swivels, both in wear resistance under heavy loads and in design. The 740-type roller bearing which the plant now manufactures for swivel supports has demonstrated its durability. It supports loads of more than 130 tons, that is, within the limits of the depths to which shafts are now sunk in Azerbaydzhan. The design characteristics of such a bearing are another matter. When the swivel is turning up to 200 revolutions per minute, the 740-type bearing operates satisfactorily. However, technical progress in drilling has made it possible to increase the speed of rotation of the rotor and the swivel connected to it to more than 400 revolutions per minute.

Rapid-drilling foremen in Buzovny and other rayons of Apsheronskiy sink shafts with the drilling tool rotating at 420 revolutions per minute. The 740-type support bearings made by the Baku State Bearing Plant do not sustain prolonged operation. Moreover, 420 revolutions per minute is not a final limit, for drilling innovators are constantly finding ways to increase rotation speed. Increasing this speed requires new, improved equipment, particularly support bearings capable of protracted operation in the swivel at rotation speeds over 400 revolutions per minute. The drillers expect the Baku State Bearing Plant to produce the parts necessary for rapid drilling of petroleum wells in the very near future.

The Machine-Building Plant imeni Lieutenant Shmidt, which holds the Order of Lenin, has developed the completely modern, high-quality Sh-V-14-type swivel, a part of the powerful forced drilling aggregate. This swivel must be equipped with a bearing capable of operating under heavy loads and at high rotation speeds. That is the most important task which confronts the Baku State Bearing Plant.

Relations between drilling workers and bearing plant personnel must be improved. Drilling innovators, Stakhanovites, engineers, and drilling office mechanics can give bearing workers many valuable suggestions. In turn, this mutual association will aid drillers to conserve equipment and improve their use of it. -- Sh. Akhmedov, director of the Kirovneft (Kirov Petroleum) Trust Drilling Office.

USES CONTINUOUS METHOD TO MACHINE BEARING RACES -- Moscow, Znaniye-Sila, No 2, Feb 51

Adoption of the continuous method of production at the Moscow First State Bearing Plant has shortened the time required for machining bearing races from 10 to 2 days.

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